



**CONESTOGA-ROVERS
& ASSOCIATES**

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February 8, 2012

Reference No. 038443-61

Ms. Laura Marshall
Ohio Environmental Protection Agency
Southwest District Office
401 East Fifth Street
Dayton, OH 45402

Dear Ms. Marshall:

Re: Reporting Procedures Resulting from LEL Exceedance
Vapor Intrusion Investigation
South Dayton Dump and Landfill Site (Site), Moraine, Ohio

Conestoga-Rovers & Associates (CRA) has prepared this letter to fulfill the requirements of Ohio Administrative Code (OAC) 3745-27-12(E)(5)(g)(ii). This letter relates to the January 9, 2012 measurement of an explosive gas concentration within a sample of the sub-slab soil vapor at the Site that was greater than the lower explosive limit (LEL). CRA has prepared this letter on behalf of the Respondents to the Administrative Settlement Agreement and Order on Consent (ASAOC) with USEPA for Remedial Investigation/Feasibility Study (RI/FS) of the Site, Docket No. V-W-06-C-852 (Respondents).

Monitoring Results

Pursuant to the ASAOC with USEPA, the Respondents installed sub-slab (SS) soil vapor probes at the Site in December 2011, and performed one round of monitoring (initial round) in January 2012. On January 9, 2012, the Respondents measured a maximum explosive gas concentration of 7.6 percent (reported as methane by volume) in one sample collected from the sub-slab soil vapor probe installed in the warehouse portion (Probe A) of the Quonset Hut on Lot 5054, at 1903 Dryden Road (Quonset Hut). The measured explosive gas concentration of 7.6 percent as methane by volume is greater than 100 percent of the LEL for methane of 5 percent methane by volume. On January 27, 2012, the Respondents received analytical laboratory results for the soil vapor sample collected from sub-slab Probe A in the Quonset Hut. Analytical laboratory results for the Quonset Hut Probe A soil vapor sample were non-detect for methane at a reporting detection limit (RDL) of 2.9 percent by volume.

The Respondents installed an additional sub-slab soil vapor probe in the office portion (Probe B) of the building and collected samples of the sub-slab vapor for explosive gas monitoring. The Respondents did not detect explosive gas in the office sub-slab vapor probe. The Respondents also measured the combustible gas concentration in the indoor air of this building and did not detect any combustible gases (i.e., the reading was 0 percent methane by volume). This building has not been



regularly occupied for over 10 years and is currently used for storage of miscellaneous items with occasional access by Valley Asphalt employees.

The elevated sub-slab explosive gas concentration was detected in a portion of the Site where historic elevated methane concentrations were measured. Since concentrations of methane are elevated in this area, the Respondents will implement mitigation measures for the entire building.

Reporting Requirements

In accordance with OAC 3745-27-12(E)(5)(g)(ii), every 30 days from the date of the initial detection of the explosive gas concentration above the threshold limit, and until the criteria allowing cessation of contingency procedures are met, the Respondents will submit to USEPA, Ohio EPA, and PHDMC a report containing the following:

- a) Analysis and summary of the results from the contingency monitoring, including the lateral extent of explosive gas concentration above the threshold limit and a characterization of the explosive gas pathway(s). Characterization of the pathway shall include degree of saturation and porosity (textural classification or fracturing); and the possible causes of the increase in gas concentrations, such as landfill operational procedures, gas control system failure or upset, climatic conditions, or closure activity.
- b) Summary of the steps taken to ensure protection of human health and the environment and an analysis of their effectiveness.

With respect to (a), the Respondents measured explosive gas values in indoor air and the sub-slab soil vapor in the building weekly, in accordance with OAC 3745-27-12(E)(5)(c). The weekly explosive gas values, measured as percent methane by volume, are provided in Table 1. The Respondents will collect concurrent sub-slab soil vapor and indoor air samples in the Quonset Hut in March 2012.

The laboratory analytical results for methane (i.e., no methane detected at a laboratory reporting limit of 2.9 percent by volume) in a sample of sub-slab soil vapor from the Quonset Hut Probe A did not correlate with the field measurements of explosive gases, reported as methane. The Respondents have asked the laboratory to review the analytical results. The Respondents used Landtec GEM 2000 combustible gas meters, as specified in the Vapor Intrusion Investigation Work Plan for the Site (Work Plan). The Respondent note that explosive gas measurements reported by the Landtec GEM 2000 meter are affected by the presence of other hydrocarbon gases (e.g., benzene, butane, ethane, heptane, propane, xylenes, etc.). The explosive gas concentration is reported as a percent as methane and as a percent of the LEL of methane¹. These hydrocarbon compounds were

¹ Through the use of charcoal filters, it is possible to remove most hydrocarbons heavier than methane from the sample stream. In accordance with the VI Work Plan, a charcoal filter was not used on the Landtec GEM 2000 in order ensure that the measurements captured the entire explosive gas concentration.



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detected in the soil vapor sample collected from the Quonset Hut Probe A. The Respondents ordered charcoal absorber filters from Landtec. The Respondents will use the filters on the Landtec GEM 2000 meter to remove and mitigate cross-gas effects and determine actual explosive gas concentrations, reported as percent methane by volume. The Respondents will measure the explosive gas concentration both with and without the charcoal filters in order to identify the source of the explosive gases.

With respect to (b), the Respondents have confirmed that the concentration of methane in the indoor air of the building is less than 25 percent of the LEL (i.e., the indoor air readings were 0 percent methane by volume). The Respondents are currently in discussions with Valley Asphalt (owner of the building) to determine the appropriate long-term mitigation approach. The long-term measures may either include the installation a depressurization system with adequate subsurface coverage to provide mitigation for the entire building, or demolition of the building. On January 24, 2012, the Respondents submitted a Mitigation Work Plan to USEPA (copied to Ohio EPA), as required by the Work Plan, in accordance with OAC 3745-27-12 and the USEPA Region 5 Vapor Intrusion Guidebook (USEPA, 2010).

If you have any questions about the sampling results or the remedial activities underway at the Site, please contact me.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Adam Loney, B.Sc. Eng.

VC/ca/3

Encl.

cc: Jim Jurgensen, Valley Asphalt
Dan Crago, Valley Asphalt
Mark Case, Public Health – Dayton & Montgomery County
Karen Cibulskis, United States Environmental Protection Agency
Ken Brown, ITW
Jim Campbell, Engineering Management, Inc.
Bryan Heath, NCR
Paul Jack, Castle Bay Inc.

TABLE 1

**VAPOR INTRUSION FIELD MONITORING VALUES
 PARCEL 5054 BUILDING 2 - QUONSET HUT
 1903 DRYDEN ROAD
 SOUTH DAYTON DUMP AND LANDFILL SITE
 MORaine, OHIO**

<i>Sample Location:</i>	<i>Date:</i>	<i>Time</i>	<i>PID (ppm)</i>	<i>O₂ (%)</i>	<i>CO₂ (%)</i>	<i>CH₄² (%)</i>	<i>LEL (%)</i>
Office ambient air	1/10/2012	--	0.2	21.4	0.1	0.0	NM
B (office)		--	1.2	21.2	0.1	0.0	NM
Warehouse ambient air		--	0.5	22.8	0.1	0.0	NM
A (warehouse)		--	50.1	4.6	3.9	7.6	NM
Warehouse ambient air	1/19/2012	10:40	0.1	24.1	0	0	ND(1) ¹
A (warehouse)		10:58	72.4	5.7	3.1	5.2	>100
B (office)		11:22	6.2	23.2	0.1	0.0	ND(1) ¹
Warehouse ambient air	1/24/2012	11:05	0.0	21.9	0.1	0.0	0
A (warehouse)		11:14	52.7	5.7	3.1	5.1	>100
Office ambient air		10:50	0.0	23.1	0.1	0.0	0
B (office)		10:57	2.5	21.7	0.1	0.0	0
Office ambient air	1/31/2012	10:19	0.0	21.5	0.0	0.0	0
B (office)		11:12	5.8	21.4	0.1	0.0	0
Warehouse ambient air		10:30	0.0	21.6	0.0	0.0	0
A (warehouse)		11:17	72.4	1.9	3.8	6.9	>100

Notes:

¹ - The explosive gas monitor baseline reading was 1 percent LEL. The meter did not zero for LEL readings and the corresponding methane readings were 0 percent; therefore, the readings of 1 percent are anomalous.

² - The Landtec GEM 2000 combustible gas monitor measures explosive gases as a percent of methane by volume. The presence of other hydrocarbon gases affects methane readings.

PID - Photoionization Detector

O₂ - Oxygen

CO₂ - Carbon Dioxide

CH₄ - Methane

LEL - Lower Explosive Limit

NM - Not measured